

1875

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Skeleton of *Pareiasaurus bairdii*, Seeley.

Karoo Formation (Frias), Bad, near Tamboer Fontein, Cape Colony.  
The original preserved in the British Museum (Natural History). Length of skeleton 7 feet 9 inches.

## NOTE ON THE SKELETON OF *PAREIASAURUS BAINI*.

By Prof. H. G. SEELEY, F.R.S., F.L.S., F.G.S.

(PLATE I.)

THE skeleton of *Pareiasaurus Baini*, which I brought from the Bath near Tamboer Fontein, in Cape Colony, is shown in the accompanying photograph of the right side of the specimen, as it is now mounted in the British Museum. It is the only known example of the group of animals to which it belongs, in which almost every part of the skeleton is shown. The Dicynodonts were familiar to us from the discovery of many skulls; the Theriodonts were mostly known from snouts; and the *Pareiasaurus*, although originally described from skull remains, had become known from the fine axial skeleton of *P. bombidens*, which Mr. Thomas Bain sent to the British Museum many years ago. I therefore entertained hope that the limbs and other missing parts of the skeleton might reward personal exploration in the country. The area to be examined was clearly defined as lying approximately between the Prince Albert Road Station and Fraserberg; for Dr. W. G. Atherstone had found the type of the species near the former locality, and Mr. Bain had found the specimen described by myself in 1887-8 at Palmiet Fontein, at the foot of the Nieuwveldt Range, towards the latter place.

The southern position, within easier access of the railway, offered the best hope of success, since a few farmers are scattered over the country, and there was hope that their Hottentot shepherds might have observed bones lying upon the surface of the ground; though such remains only occur in small oases among immense unproductive or desert areas. Between the Zwarteberg, on the south, and the Nieuwveldt Range on the north, the country is generally level, or but slightly undulating. At Bad the rocks become folded and more elevated; and there, by the kindly offices of Mr. J. S. Marais, and accompanied by the late Mr. Thomas Bain, I first saw the fossil dimly outlined in the hard concretionary and slaty rock, some distance up on the hill, on the 11th August, 1889, and at once determined it as the *Pareiasaurus* for which I was systematically searching. The specimen had obvious defects, due to partial exposure, the compression of some of the limb bones, and the friable condition of parts which had long been under the expanding influence of the sun. On the following day I had the pleasure of

removing the remains, with the aid of my friends, from the mountain side. It was my share of the task to direct and control the quarrying operations of ten men, all through the day, to identify every part of the skeleton as it was successively exposed, so as to prevent the picks from destroying it as soon as it was touched; to mark with vermilion colour every isolated block as it was broken away from the remains, so as to have hope that they would some day be joined together again; and finally to direct the carrying of the blocks down to the boxes in the waggon which was waiting to receive them in the valley below, so as to insure that pieces which were associated should not be widely separated from each other. With the exception of Mr. Marais and Mr. Thomas Bain, I had never previously met any of the men who shared with me the labour of getting the fossil away. After many accidents, resulting from its weight being greater than the boxes obtainable were able to endure, the fossil reached the British Museum, an unprepossessing heap of rock, among which were some indications of bones.

During three months I built those fragments together, so as to restore the remains to the aspect which they presented on the mountain side on that 12th of August. And then the rock was gradually removed by Mr. Richard Hall, under my constant supervision, extending over the greater part of two years. The bones were retained in the positions in which they were found at first, till it became manifest that, by partially separating them, they might be articulated with each other. Thus a partial restoration of the form of the skeleton has been made, without attempting to restore the vertebral column to its original curvature. To this Mr. Caleb Barlow has contributed in moulding the forms of some bones on the left side, now tinted a paler colour, which were not found.

At present it would be premature to say anything concerning this animal as a contribution to the stores of knowledge of animal structure in comparative anatomy. It admits of being compared with the known groups of reptiles recent and fossil as well as with mammals. Hereafter the value of these comparisons will become evident when the fossil allies of the *Pareiasaurus* take their places by its side. Its true affinities are to a great extent masked under superficial characteristics, such as are seen in the pitted armour which roofs over the skull, in a way which parallels the labyrinthodont type, so as to show that Labyrinthodonts more closely approach reptiles than had been previously demonstrable. The single occipital condyle, even though it is almost as concave as in a Teleostian fish, leaves no doubt that the animal finds its place among true reptilia. But no animal previously known has shown such a multitude of sharp recurved teeth on the palate, coupled with teeth in sockets in the alveolar margins of the jaw; which are like those of the marine lizard *Amblyrhynchus* in general type, though the number of denticles is greater, and the successional teeth appear to be arranged uniformly in the mandible below the series in use. The most singular structure of the palate is the lateral truncation of what are probably the

transverse bones, so that those bones extend between the rami of the mandible. Notwithstanding the extremely heavy build of the animal, there is much that recalls mammals in the characters of the pelvis, the shoulder-girdle, and the fore and hind limbs; so that the fossil stands alone at present in its approximation in these regions of the skeleton to the highest vertebrata, though it is the shoulder-girdle chiefly which fixes its affinity with the Monotremata. The new knowledge of the reptilian skeleton which this animal supplies gives a meaning to the Ordinal term Anomodontia, by showing resemblances in the teeth to various groups of animals which could never have been suspected from the reptilian structure of the skull, or the mammalian structure of the extremities.

It has been a pleasure to contribute a fossil which has made this animal type more intelligible; but it is no less a pleasure to acknowledge that everything has been done by Dr. Henry Woodward to secure that the specimen should receive the best treatment possible, both before and after it was presented to the National Collection.









DISTANCE

SOME TIGHT  
GUTTERS

